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ISCHAEMIC HEART DISEASE

Low molecular weight heparin to treat pulmonary embolism ► In a meta-analysis of 12 trials, low molecular weight heparin was associated with a non-significant decrease in recurrent symptomatic venous thromboembolism at the end of treatment (1.4% *v* 2.4%; odds ratio (OR) 0.63, 95% confidence interval (CI) 0.33 to 1.18) and at three months (3.0% *v* 4.4%; OR 0.68, 95% CI 0.42 to 1.09) compared to unfractionated heparin. Similar estimates were obtained for patients who presented with symptomatic pulmonary embolism (1.7% *v* 2.3%; OR 0.72, 95% CI 0.35 to 1.48) or asymptomatic pulmonary embolism (1.2% *v* 3.2%; OR 0.53, 95% CI 0.15 to 1.88). For major bleeding complications, the odds ratio favouring low molecular weight heparin (1.3% *v* 2.1%; OR 0.67, 95% CI 0.36 to 1.27) was also not significant. This suggests that low molecular weight heparin is probably a safer alternative for the treatment of pulmonary as well as deep vein thrombosis.

▲ **Quinlan DJ**, McQuillan A, Eikelboom JW. Low-molecular-weight heparin compared with intravenous unfractionated heparin for treatment of pulmonary embolism: a meta-analysis of randomized, controlled trials. *Ann Intern Med* 2004;**140**:175–83.

Warfarin for six months removes atrial appendage thrombus in 25% ► Among 219 candidates for percutaneous mitral commissurotomy (PTMC) with left atrial thrombus (mean age 39.6 (7.4) years) complete resolution of thrombus was demonstrated in 53 patients (24.2%), who subsequently underwent successful PTMC. In another 166 patients, the thrombus size was reduced by 24% ($p < 0.001$). No thrombus resolution was observed in the 27 patients with a left atrial body thrombus. Eighteen patients had minor bleeding. The significant predictors of thrombus resolution were a New York Heart Association functional class $\leqslant$ II, a left atrial appendage thrombus size $\leqslant$ 1.6 cm^2, a left atrial spontaneous echocardiographic contrast grade of $\leqslant$ 1, and an international normalised ratio (INR) of at least 2.5. Patients with all of these predictors had a 94.4% chance of complete thrombus resolution (95% CI 84.4% to 98.1%).

▲ **Silaruks S**, Thinkhamrop B, Kiatchoosakun, S, Wongvipaporn C, Tatsanavivat P. Resolution of left atrial thrombus after 6 months of anticoagulation in candidates for percutaneous transvenous mitral commissurotomy. *Ann Intern Med* 2004;**140**:101–5.

Chest pain clinics are effective as well as being a government demand ► The emergency room of a large hospital sees a lot of chest pain patients. Sorting the wheat from the chaff is easier with troponin measurements, but is still a problem. In 972 patients, half attended on days when a chest pain unit was in use, and half when standard care was given. Use of a chest pain observation unit reduced the proportion of patients admitted from 54% to 37% (difference 17%; OR 0.50, 95% CI 0.39 to 0.65, $p < 0.001$) and the proportion discharged with acute coronary syndrome from 14% to 6% (OR 8%, 95% CI −7% to 23%, $p = 0.264$). Rates of cardiac event were unchanged. Care in the chest pain observation unit was associated with a saving of £78 per patient (95% CI −£56 to £210, $p = 0.252$).

▲ **Goodacre S**, Nicholl J, Dixon S, Cross E, Angelini K, Arnold J, Revill S, Locker T, Capewell SJ, Quinney D, Campbell S, Morris F. Randomised controlled trial and economic evaluation of a chest pain observation unit compared with routine care. *BMJ* 2004;**328**:254.

Placental growth factor as a marker for risk above and beyond the troponin level ► Concentrations of placental growth factor (PlGF) as well as concentrations of markers of myocardial necrosis (troponin T), platelet activation (soluble CD40 ligand), and inflammation (high sensitivity C reactive protein (hsCRP)) were measured in 547 patients with angiographically validated acute coronary syndrome (ACS) participating in the CAPTURE (c7E3 Fab anti-platelet therapy in unstable refractory angina) trial and in a heterogeneous cohort of 626 patients presenting with acute chest pain to an emergency department in Germany between December 1996 and March 1999. In patients with ACS, elevated PlGF values (> 27.0 ng/l; 40.8% of patients) indicated a notably increased risk of events at 30 days (14.8% *v* 4.9%, $p < 0.001$). In a multivariable model, elevated values of TnT, sCD40L, and PlGF (hazard ratio (HR) 3.03, 95% CI 1.54 to 5.95, $p < 0.001$) were independent predictors, while elevated hsCRP concentration was not. In patients with acute chest pain, elevated concentrations of PlGF predicted risk (21.2% *v* 5.3%) (unadjusted: HR 4.80, 95% CI 2.81 to 8.21, $p < 0.001$; adjusted: HR 3.00, 95% CI 1.68 to 5.38, $p < 0.001$). Patients negative for all three markers (TnT, sCD40L, and PlGF) were at very low cardiac risk (7 days: no event; 30 days: 2.1% event rate).

▲ **Heeschen C**, Dimmeler S, Fichtlscherer S, Hamm CW, Berger J, Simoons M, Zeiher AM, for the CAPTURE Investigators. Prognostic value of placental growth factor in patients with acute chest pain. *JAMA* 2004;**291**:435–41.

Ranolazine: the new antianginal ► The antianginal action of ranolazine may be related to partial inhibition of fatty acid oxidation, which can produce anti-ischaemic effects without depressing haemodynamic function. Inhibition of fatty acid oxidation reciprocally increases glucose oxidation, which generates more adenosine triphosphate for each molecule of oxygen consumed. This shift in substrate selection may reduce myocardial oxygen supply needed to support a given level of cardiac work so that for any level of coronary flow, ischaemia should be less likely. Trough exercise duration increased by 115.6 seconds from baseline in both ranolazine groups (pooled) versus 91.7 seconds in the placebo group ($p = 0.01$). The times to angina and to electrocardiographic ischaemia also increased in the ranolazine groups, at peak more than at trough. The increases did not depend on changes in blood pressure, heart rate, or background antianginal treatment and persisted throughout 12 weeks. Ranolazine reduced angina attacks and glyceryl trinitrate use by about one per week versus placebo ($p < 0.02$). There was no difference in survival or cardiovascular events in the two groups.

▲ **Chaitman BR**, Pepine CJ, Parker JO, Skopal J, Chumakova G, Kuch J, Wang W, Skettino SL, Wolff AA for the Combination Assessment of Ranolazine In Stable Angina (CARISA) Investigators. Effects of ranolazine with atenolol, amlodipine, or diltiazem on exercise tolerance and angina frequency in patients with severe chronic angina: a randomized controlled trial. *JAMA* 2004;**291**:309–16.

HEART FAILURE

Exercise training in heart failure saves lives: a meta-analysis ► In health taking more exercise is associated with better prognosis; the same should hold true when you are not healthy. Single studies of exercise in heart failure have not been powered to show reduced mortality. This meta-analysis suggests mortality was significantly lower in the exercise group (log rank $\chi^2 = 5.9$, $p = 0.015$). The hazard ratio for mortality was computed to be 0.65 (95% CI 0.46 to 0.92). These results imply a number needed to treat of 17 to prevent one death in two years. This effect was not explained by any difference in drug regimen.

▲ Exercise training meta-analysis of trials in patients with chronic heart failure. (ExTraMATCH). *BMJ* 2004;**328**:189.

HYPERTENSION

Checking blood pressure every six months is as good as every three months ► How often should the general practitioner

check your blood pressure? Most guidelines suggest 3–6 months once control is achieved. A total of 302 patients were randomly assigned to follow up every three months and 307 to follow up every six months. As expected, patients in the six month group had significantly fewer visits, but patients in both groups visited their doctor more frequently than their assigned interval. Mean blood pressure was similar in the groups, as was control of hypertension. Patient satisfaction and adherence to treatment were similar in the groups. About 20% of patients in each group had blood pressures that were out of control during the study.

▲ **Birtwhistle RV**, Godwin MS, Delva MD, Casson RI, Lam M, MacDonald SE, Seguin R, Rühland L. Randomised equivalence trial comparing three month and six month follow up of patients with hypertension by family practitioners. *BMJ* 2004;**328**:204.

Journals scanned

American Journal of Medicine; American Journal of Physiology: Heart and Circulatory Physiology; Annals of Emergency Medicine; Annals of Thoracic Surgery; Archives of Internal Medicine; BMJ; Chest; European Journal of Cardiothoracic Surgery; Lancet; JAMA; Journal of Clinical Investigation; Journal of Diabetes and its Complications; Journal of Immunology; Journal of Thoracic and Cardiovascular Surgery; Nature Medicine; New England Journal of Medicine; Pharmacoeconomics; Thorax

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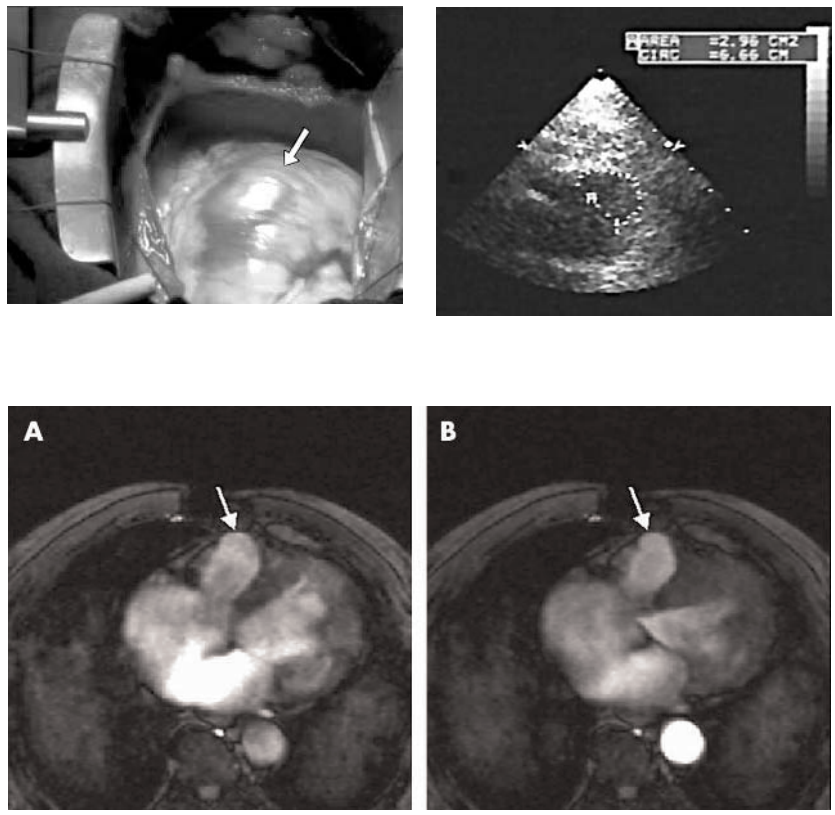
IMAGES IN CARDIOLOGY

Right ventricular aneurysm following right ventricular infarction

A 66 year old man was referred to our hospital with post-infarction angina. He had experienced an inferior myocardial infarction 21 and 15 years previously, and an anteroseptal myocardial infarction two years previously. He was scheduled for coronary angiography on day 3 after hospitalisation. Left ventriculography showed akinetic inferior and anterior walls, proximal occlusion of the right coronary artery (RCA), occlusion of the circumflex coronary artery (Cx), and occlusion of the distal third at the left anterior descending (LAD) coronary artery. Intense collateral circulation was observed. Due to the persistence of angina, coronary bypass surgery was indicated. During surgery, after opening the pericardium, an abnormality was found in the anterior wall of the right ventricle. Near the right ventricular outflow tract an aneurysm was observed (left upper panel). Four saphenous vein grafts were used for the RCA, LAD, Cx, and diagonal revascularisation. The right ventricular aneurysm was not corrected. At the end of the procedure there was no difficulty weaning the patient off cardiopulmonary bypass. There were no postoperative complications; the patient was discharged seven days after the operation and is doing well eight weeks postoperatively. Echocardiography (right upper panel) and magnetic resonance imaging (panels A and B) performed on day 15 postoperatively confirmed the right ventricular aneurysm. To our knowledge this patient is the third case to be described in the literature and the first directly visualised.



Gradient echo magnetic resonance image of the right ventricular aneurysm in diastole (A) and systole (B). (A) Diastolic image demonstrates focal thinning of the right ventricle wall (arrow). (B) Systolic image showing lack of thickening of the right ventricular wall (arrow).

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